

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: )  
MAY )  
Serial No.: )  
Filed: )  
For: Herewith )  
FLOW CONTROL VALVE )  
Attorney Docket No.: )  
UDL 2 0018 )

Examiner:

Art Unit:

Cleveland, OH 44114  
December 17, 2001

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, DC 20231

Dear Sir:

Prior to calculation of the filing fee and prior to examination, please amend the subject application as follows:

IN THE CLAIMS

*Kindly cancel claim 11 without prejudice.*

*Kindly amend claims 4, 6 and 8-10 as follows:*

CERTIFICATE OF MAILING

I hereby certify that this PRELIMINARY AMENDMENT is being deposited with the United States Postal Service as EXPRESS MAIL in an envelope numbered EL 852686802 US addressed to Assistant Commissioner for Patents, Washington, D.C. 20231, on December 17, 2001.

By:

*Stu M. Haas* 12/17/2001  
Steven M. Haas

4. (Amended) A flow control valve according to claim 1, wherein said piston member includes a piston head, and said throttling orifice is defined between a downstream edge of said piston head and said non-uniform portion of the fluid flow passageway.
6. (Amended) A flow control valve according to claim 4, wherein the piston member includes a support structure, said support structure being mounted for sliding movement in the bore.
8. (Amended) A flow control valve according to claim 6, wherein the support structure includes a substantially axial fluid flow passageway.
9. (Amended) A flow control valve according to claim 6, wherein the support structure is engaged by a resilient biasing member.
10. (Amended) A flow control valve according to claim 1, including a housing in which the body member can be mounted, wherein said housing is capable of accommodating interchangeable flow control valve cartridges having different fluid flow capacities.

***Kindly insert the following new claims 12 - 20  
into the application:***

12. A flow control valve according to claim 2, wherein said piston member includes a piston head, and said throttling orifice is defined between a downstream edge of said piston head and said non-uniform portion of the fluid flow passageway.
13. A flow control valve according to claim 3, wherein said piston member includes a piston head, and said throttling orifice is defined between a downstream edge of said piston head and said non-uniform portion of the fluid flow passageway.
14. A flow control valve according to claim 5, wherein the piston member includes a support structure, said support structure being mounted for sliding movement in the bore.
15. A flow control valve according to claim 7, wherein the support structure includes a substantially axial fluid flow passageway.
16. A flow control valve according to claim 7, wherein the support structure is engaged by a resilient biasing member.
17. A flow control valve according to claim 8, wherein the support structure is engaged by a resilient biasing member.

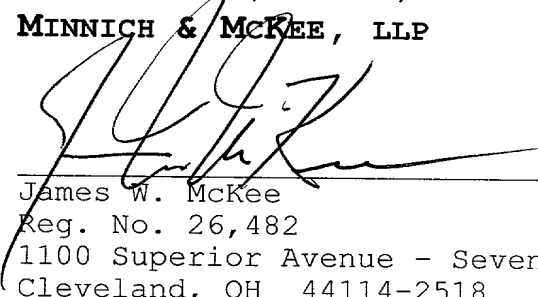
18. A flow control valve according to claim 2, including a housing in which the body member can be mounted, wherein said housing is capable of accommodating interchangeable flow control valve cartridges having different fluid flow capacities.
19. A flow control valve according to claim 3, including a housing in which the body member can be mounted, wherein said housing is capable of accommodating interchangeable flow control valve cartridges having different fluid flow capacities.
20. A flow control valve comprising:  
a body member having a bore defining a fluid flow passageway;  
a resiliently-biased piston member mounted in said passageway for movement relative to the body member in response to differential fluid pressure across the valve, said piston member defining an annular throttling orifice between said piston member and said bore, wherein at least a portion of said passageway has a non-uniform cross-section, such that a size of the annular orifice depends on a position of the piston member relative to the body member, said piston member comprising a side wall that cooperates with the non-uniform portion of the fluid flow passageway to define an annular fluid flow slot, said slot having a length and a cross-sectional area that depend on the position of the piston member relative to the body member.

**REMARKS**

This communication is a preliminary amendment to the application identified above in order to remove all multiple dependent claims and to present new claims. All pending claims, i.e., claims 1-20, are submitted to distinguish patentably and unobviously over the references of record and, therefore, a notice of allowance is respectfully requested.

Respectfully submitted,

**FAY, SHARPE, FAGAN,  
MINNICH & MCKEE, LLP**



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James W. McKee  
Reg. No. 26,482  
1100 Superior Avenue - Seventh Floor  
Cleveland, OH 44114-2518  
Telephone (216)861-5582  
Facsimile (216)241-1666

Encl.: Version with Markings to Show Changes Made

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FAY, SHARPE, FAGAN,  
MINNICH & MCKEE, LLP

VERSION WITH MARKINGS TO SHOW CHANGES MADE

*Claim 11 has been canceled.*

*Claims 4, 6 and 8-10 been amended as follows:*

4. (Amended) A flow control valve according to [any one of the preceding claims]claim 1, wherein said piston member includes a piston head, and said throttling [aperture]orifice is defined between a downstream edge of said piston head and said non-uniform portion of the fluid flow passageway.
6. (Amended) A flow control valve according to claim 4 [or 5], wherein the piston member includes a support structure, said support structure being mounted for sliding movement in the bore.
8. (Amended) A flow control valve according to claim 6 [or claim 7], wherein the support structure includes a substantially axial fluid flow passageway.
9. (Amended) A flow control valve according to [any one of claims 6 to 8]claim 6, wherein the support structure is engaged by a resilient biasing member.
10. (Amended) A flow control valve according to [any one of the preceding claims]claim 1, including a housing in which the body member can be mounted, wherein said housing is capable of accommodating interchangeable flow control valve cartridges having different fluid flow capacities.

*New claims 12 - 20 have been presented as follows:*

12. A flow control valve according to claim 2, wherein said piston member includes a piston head, and said throttling orifice is defined between a downstream edge of said piston head and said non-uniform portion of the fluid flow passageway.
13. A flow control valve according to claim 3, wherein said piston member includes a piston head, and said throttling orifice is defined between a downstream edge of said piston head and said non-uniform portion of the fluid flow passageway.
14. A flow control valve according to claim 5, wherein the piston member includes a support structure, said support structure being mounted for sliding movement in the bore.
15. A flow control valve according to claim 7, wherein the support structure includes a substantially axial fluid flow passageway.
16. A flow control valve according to claim 7, wherein the support structure is engaged by a resilient biasing member.
17. A flow control valve according to claim 8, wherein the support structure is engaged by a resilient biasing member.

18. A flow control valve according to claim 2, including a housing in which the body member can be mounted, wherein said housing is capable of accommodating interchangeable flow control valve cartridges having different fluid flow capacities.
19. A flow control valve according to claim 3, including a housing in which the body member can be mounted, wherein said housing is capable of accommodating interchangeable flow control valve cartridges having different fluid flow capacities.
20. A flow control valve comprising:  
a body member having a bore defining a fluid flow passageway;  
a resiliently-biased piston member mounted in said passageway for movement relative to the body member in response to differential fluid pressure across the valve, said piston member defining an annular throttling orifice between said piston member and said bore, wherein at least a portion of said passageway has a non-uniform cross-section, such that a size of the annular orifice depends on a position of the piston member relative to the body member, said piston member comprising a side wall that cooperates with the non-uniform portion of the fluid flow passageway to define an annular fluid flow slot, said slot having a length and a cross-sectional area that depend on the position of the piston member relative to the body member.